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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/661,194	09/12/2003	Paul A. Cahill	EXC / 35CI	8306

26875 7590 12/21/2006
WOOD, HERRON & EVANS, LLP
2700 CAREW TOWER
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CINCINNATI, OH 45202

EXAMINER

WONG, EDNA

ART UNIT	PAPER NUMBER
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1753

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	12/21/2006	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary

Application No.

10/661,194

Applicant(s)

CAHILL ET AL.

Examiner

Edna Wong

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 20 November 2006.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-30 is/are pending in the application.
- 4a) Of the above claim(s) 16 and 23-30 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-15 and 17-22 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☒ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- ☒ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☒ Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date See Continuation Sheet.
- ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____.
- ☐ Notice of Informal Patent Application
- ☐ Other: _____.

Continuation of Attachment(s) 3). Information Disclosure Statement(s) (PTO/SB/08), Paper No(s)/Mail Date :January 7, 2004 and January 9, 2004.

Election/Restrictions

Applicant's election of Group I, claims **1-15 and 17-22**, in the reply filed on November 20, 2006 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

Accordingly, claims **16 and 23-30** are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Specification

The disclosure is objected to because of the following informalities:

page 1, line 8, the words -- , now US Patent No. 6,635,152 -- should be inserted after the year "2000".

page 5, line 12, the word "trialkyamine" should be amended to the word -- trialkylamine --.

Appropriate correction is required.

Claim Objections

Claim **4** is objected to because of the following informalities:

Claim 4

line 1, the word "wherein" (second occurrence) should be deleted.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

Claims **2-4, 14 and 21-22** are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2

line 2, it is unclear what is meant by "to said norbornadiene **to** the solution".

Claim 14

line 2, "a WG220, a WG280, a WG295, a WG305, and a WG320 filter" is indefinite (MPEP § 2173.05(u)).

Claim 21

lines 2-3, "a WG220, a WG280, a WG295, a WG305, and a WG320 filter" is indefinite (MPEP § 2173.05(u)).

Double Patenting

The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. A nonstatutory obviousness-type double patenting rejection is appropriate where the conflicting claims are not identical, but at least one examined application claim is not patentably distinct from the reference claim(s) because the examined application claim is either anticipated by, or would have been obvious over, the reference claim(s). See, e.g., *In re Berg*, 140 F.3d 1428, 46 USPQ2d 1226 (Fed. Cir. 1998); *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321(c) or 1.321(d) may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent either is shown to

be commonly owned with this application, or claims an invention made as a result of activities undertaken within the scope of a joint research agreement.

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

Claims **1-15 and 17-22** are rejected on the ground of nonstatutory obviousness type double patenting as being unpatentable over claims **1-8** of U.S. Patent No. 6,635,152 B1 (**Cahill et al.**) in view of **Alberici et al.** (US Patent No. 5,076,813).

The present claims recite:

1. A process for producing quadricyclane, the process comprising: providing a solution comprising ***norbornadiene***; and irradiating said solution with ***light*** filtered through a sharp cut-off filter, whereby said norbornadiene is converted to ***quadricyclane***.
2. The process of claim 1 further comprising adding a substituted diaminobenzophenone to said norbornadiene to the solution prior to irradiating said solution, said substituted diaminobenzophenone having a solubility in norbornadiene greater than the solubility of Michler's Ketone in norbornadiene.
3. The process of claim 2 wherein said substituted diaminobenzophenone is selected from the group consisting of Ethyl Michler's Ketone, 4,4'-bis(dipropylamino)benzophenone, 4,4'-bis(dibutylamino)benzophenone, 4,4'-bis(methylethylamino)benzophenone, 4,4'-bis(t-butylmethylamino)benzophenone, and a combination thereof.
4. The process of claim 3 wherein said substituted diaminobenzophenone is ***Ethyl Michler's***

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Ketone, added to said norbornadiene in the range of **about 0.2% to about 3.86% by weight**.

5. The process of claim 1 wherein said solution is irradiated with **a metal halide-doped mercury arc lamp**.

6. The process of claim 1 wherein said solution is irradiated with **an iron halide-doped mercury arc lamp**.

7. The process of claim 1 further comprising adding a base to said solution prior to irradiating said solution, said base reducing the formation of by-products during said conversion.

8. The process of claim 7 wherein said base is **a trialkylamine**.

9. The process of claim 1 wherein said solution is irradiated with a lamp having enhanced output in the wavelength range of about 250 nm to about 400 nm.

10. The process of claim 1 wherein said solution is irradiated with a lamp having enhanced output in the wavelength range of **340 nm to 390 nm**.

11. The process of claim 1 further comprising regulating the temperature of said solution between about -40°C and about 60°C.

12. The process of claim 1 further comprising regulating the temperature of said solution between about -10°C. and about 30°C.

13. The process of claim 1 further comprising regulating the temperature of said solution at about 0°C.

14. The process of claim 1 wherein said sharp cut-off filter is one of a WG220, a WG280, a WG295, a WG305, and a WG320 filter.

15. The process of claim 1 wherein said sharp cut-off filter has a thickness in the range from about 0.5 mm to about 10 mm.

17. A process for the production of quadricyclane, the process comprising: providing **purified norbornadiene**; adding **Ethyl Michler's Ketone** to said norbornadiene in the range of **about 0.2% to about 3.86%** by weight to form a solution; and irradiating said solution with **light** emitted from **an iron halide-doped mercury arc lamp** and filtered through a filter to have an enhanced output in the range of **about 340 nm to about 390 nm**, wherein said norbornadiene is converted to **quadricyclane**.

18. The process of claim 17 further comprising adding triethylamine to said solution to reduce the formation of by-products during the conversion.

19. The process of claim 17 further comprising regulating the temperature of said solution at about 0°C.

20. The process of claim 17 wherein said light is filtered through a borosilicate glass having a thickness in the range from about 0.5 mm to about 10 mm.

21. The process of claim 17 wherein said light is filtered through a sharp cut-off filter selected from the group consisting of a WG220, a WG280, a WG295, a WG305, and a WG320 filter.

22. The process of claim 21 wherein said sharp cut-off filter has a thickness in the range from about 0.5 mm to about 10 mm.

The US Patent claims recite:

1. A process of driving a non-polymerization solution-phase photochemical transformation, comprising the steps of: providing **an organic solution** having the potential for a non-polymerization solution-phase photochemical transformation; and irradiating said organic solution with **a metal-halide doped mercury arc lamp** to drive said **non-polymerization solution-phase photochemical transformation** within said organic solution.

2. The process of claim 1 wherein said irradiating step is carried out with **an iron halide-doped mercury arc lamp** having an enhanced output in the range of **about 340 nm to about 390 nm**.

3. A process of driving a non-polymerization solution-phase photochemical transformation, comprising the steps of: providing **a solution containing molecules** having triplet energies up to about the triplet energy of a diaminobenzophenone sensitizer with a solubility in said solution greater than the solubility of Michler's Ketone; adding a diaminobenzophenone sensitizer to said solution, wherein said

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sensitizer has a solubility in said solution greater than Michler's Ketone; and irradiating said solution with **light**, said solution having said sensitizer added thereto, to drive a **non-polymerization solution phase photochemical transformation** within said solution.

4. The process of claim 3 wherein said sensitizer is **Ethyl Michler's Ketone**.

5. The process of claim 3 wherein said irradiating step is carried out with a metal halide-doped mercury arc lamp.

6. The process of claim 5 wherein said irradiating step is carried out with an iron halide-doped mercury arc lamp having an enhanced output in the range of about 340 nm to about 390 nm.

7. A process of driving a non-polymerization solution phase photochemical transformation, comprising the steps of: providing **an organic solution** having the potential for a non-polymerization solution-phase photochemical transformation; **adding a base to said organic solution**; and irradiating said organic solution with **light**, whereby said base reduces the formation of by-products during said **non-polymerization solution phase photochemical transformation**.

8. A process of driving a non-polymerization solution phase photochemical transformation, comprising the steps of: providing **a solution** having the potential for a non-polymerization solution-phase photochemical transformation; adding **triethylamine** to said solution; and irradiating said solution with **light**, whereby said triethylamine reduces the formation of by-products during said **non-polymerization solution phase photochemical transformation**.

The US Patent claims differ from the present claims because the US Patent claims do not recite the following:

(a) norbornadiene; and

(b) quadricyclane.

However, the organic solution (claims 1 and 7), solution containing molecules (claim 3) and solution (claim 8) recited in the US Patent claims encompasses norbornadiene, and the non-polymerization solution-phase photochemical transformation within said organic solution (claims 1, 3 and 7-8) recited in the US Patent claims encompasses the conversion to quadricyclane because:

(a) Alberici teaches that 110 g of norbornadiene at 97% and 0.1 g of Michler's ketone (bis-4,4'-dimethylamminobenzophenone) charged under nitrogen to a photochemical reactor containing a 150-Watt lamp (high pressure mercury vapor lamp) produces quadricyclane (col. 3, lines Example 1); and

(b) The **only** photochemical transformation disclosed by the US Patent is

a process for producing quadricyclane (cols. 2-8), wherein the invention is achieved by irradiating a solution of purified or unpurified norbornadiene and a sensitizer having a solubility in norbornadiene greater than that of Michler's Ketone with light emissions from a light source having wavelengths in the range of 340 nm to 390 nm (col. 2, lines 13-26).

One can judge that whether or not the invention claimed in an application is an obvious variation of an embodiment disclosed in the patent which provides support for the patent claim. *In re Vogel*, 422 F.2d 438, 441-42, 164 USPQ 619, 622 (CCPA 1970) [MPEP § 804(B)(1)].

The US Patent claims do not have support for any other process other than a process for producing quadricyclane.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

I. Claims **1-4 and 9-13** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alberici et al.** (US Patent No. 5,076,813) in combination with **Pasternak et al.** (US Patent No. 5,326,440) and **Applicants' admitted prior art** (specification: page 2, lines 12-18; and page 9, line 15 to page 10, line 2).

Alberici teaches a process for producing quadricyclane, the process comprising:

(a) providing a solution comprising norbornadiene (= norbornadiene at 97%); and
(b) irradiating said solution with light (= a 150-Watt lamp (high pressure mercury vapor lamp)),

whereby said norbornadiene is converted to quadricyclane (col. 2, lines 21-40; and col. 3, Example 1).

The solution is irradiated with a lamp having enhanced output in the wavelength range of about 250 nm to about 400 nm (= from the 150-Watt lamp (high pressure mercury vapor lamp)) [col. 3, Example 1].

The solution is irradiated with a lamp having enhanced output in the wavelength range of 340 nm to 390 nm (= from the 150-Watt lamp (high pressure mercury vapor lamp)) [col. 3, Example 1].

The temperature of said solution is regulated between about -40°C. and about 60°C (= standard temperature and pressure).

The temperature of said solution is regulated between about -10°C. and about 30°C (= standard temperature and pressure).

The temperature of said solution is regulated at about 0°C (= standard temperature and pressure).

The process of Alberici differs from the instant invention because Alberici does not disclose the following:

a. Wherein the light is filtered through a sharp cut-off filter, as recited in claim

1.

Like Alberici, Pasternak teaches photo-irradiation. Pasternak teaches that the control of the conversion and selectivity in practice may commonly be effected by employing a mercury vapor light (which yields a spectrum of light of 2200 Å-5800 Å) [280 nm-580 nm] which is mounted with various absorption sleeves which cut out light below the designated wavelengths (col. 3, lines 3-27).

Applicants disclose that some photoreactor(s) available from Electro-Lite Corp. include a "sharp cut-off" filter is understood by those of ordinary people in the art and is intended to generally refer to any filter capable of effectively filtering light to remove wavelengths outside of a specified wavelength or specified range (Applicants' admitted prior art, specification: page 9, line 15 to page 10, line 2).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the light described by Alberici by filtering the light through a sharp cut-off filter because employing a mercury vapor light which is mounted with various absorption sleeves or filters which cut out light outside of a specified wavelength was commonly effected to control the conversion and selectivity of the reaction as taught by Pasternak (col. 3, lines 3-27).

b. Adding a substituted diaminobenzophenone to said norbornadiene to the solution prior to irradiating said solution, said substituted diaminobenzophenone having

a solubility in norbornadiene greater than the solubility of Michler's Ketone in norbornadiene, as recited in claim 2.

c. Wherein said substituted diaminobenzophenone is selected from the group consisting of Ethyl Michler's Ketone, 4,4'-bis(dipropylamino)benzophenone, 4,4'-bis(dibutylamino)benzophenone, 4,4'-bis(methylethylamino)benzophenone, 4,4'-bis(t-butyl-methylamino)benzophenone, and a combination thereof, as recited in claim 3.

Alberici teaches Michler's ketone (bis-4,4'-**dimethyl**amminobenzophenone) [col. 2, lines 35-36; and col. 3, lines 41-42].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the process described by Alberici by adding a substituted diaminobenzophenone to said norbornadiene to the solution prior to irradiating said solution, said substituted diaminobenzophenone having a solubility in norbornadiene greater than the solubility of Michler's Ketone in norbornadiene; and wherein said substituted diaminobenzophenone is selected from the group consisting of **Ethyl** Michler's Ketone, 4,4'-bis(dipropylamino)benzophenone, 4,4'-bis(dibutylamino)benzophenone, 4,4'-bis(**methylethyl**amino)benzophenone, 4,4'-bis(t-butyl-methylamino)benzophenone, and a combination thereof because structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with

improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

d. Wherein said substituted diaminobenzophenone is Ethyl Michler's Ketone, added to said norbornadiene in the range of about 0.2% to about 3.86% by weight, as recited in claim 4.

Alberici teaches Michler's ketone (bis-4,4'-**dimethyl**amminobenzophenone) [col. 2, lines 35-36; and col. 3, line 41-42].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the Michler's ketone described by Alberici with wherein said substituted diaminobenzophenone is Ethyl Michler's Ketone because structural relationships may provide the requisite motivation or suggestion to modify known compounds to obtain new compounds. For example, a prior art compound may suggest its homologs because homologs often have similar properties and therefore chemists of ordinary skill would ordinarily contemplate making them to try to obtain compounds with improved properties (MPEP § 2144.08(II)(A)(4)(c) and §2144.09).

As to adding to said norbornadiene in the range of about 0.2% to about 3.86% by weight, Alberici teaches that 0.1 g of Michler's ketone (bis-4,4'-dimethylamminobenzophenone) [col. 2, lines 35-36; and col. 3, lines 41-42] resulted in conversions of 99% of bornadiene with 99% selectivity to quadricyclane (col. 2, lines 36-40).

Thus, the concentration of said substituted diaminobenzophenone is a result-

effective variable and one skilled in the art has the skill to calculate the concentration of said substituted diaminobenzophenone that would have determined the success of the desired reaction to occur, i.e., the conversions of bornadiene and selectivity to quadricyclane (MPEP § 2141.03 and § 2144.05(II)(B)).

II. Claims **5 and 6** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alberici et al.** (US Patent No. 5,076,813) in combination with **Pasternak et al.** (US Patent No. 5,326,440), **Applicants' admitted prior art** (specification: page 2, lines 12-18; and page 9, line 15 to page 10, line 2) as applied to claims 1-4 and 9-13 above, and further in view of **JP 60-228424 ('424)**.

Alberici, Pasternak and Applicants' admitted prior art are as applied above and incorporated herein.

The process of Alberici differs from the instant invention because Alberici does not disclose the following:

- a. Wherein said solution is irradiated with a metal halide-doped mercury arc lamp, as recited in claim 5.
- b. Wherein said solution is irradiated with an iron halide-doped mercury arc lamp, as recited in claim 6.

Like Alberici, JP '424 teaches photo-irradiation. JP '424 teaches that light irradiation is effected with a high-pressure mercury lamp, metal halide lamp or fluorescent lamp emitting light of 3,200 ~ 4,200 Å (= 320 ~ 420 nm) [abstract].

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the 150-Watt lamp (high pressure mercury vapor lamp) described by Alberici with wherein said solution is irradiated with a metal halide-doped mercury arc lamp; and wherein said solution is irradiated with an iron halide-doped mercury arc lamp because a metal halide-doped mercury arc lamp or an iron halide-doped mercury arc lamp would have been a functionally equivalent light source in providing the radiation necessary to synthesize quadricyclane as taught by JP '424 (abstract).

Furthermore, the selection of old parts to operate in new environments in order to achieve the same results was held to have been obvious. *In re Ross* 105 USPQ 237. And the substitution of known equivalent structures was held to have been obvious. *In re Ruff* 118 USPQ 343 (CCPA 1958).

Furthermore, a metal halide lamp would have used elements in an amalgam with the mercury. These lamps can produce much better quality light without resorting to phosphors.

III. Claims 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alberici et al.** (US Patent No. 5,076,813) in combination with **Pasternak et al.** (US Patent No. 5,326,440) and **Applicants' admitted prior art** (specification: page 2, lines 12-18; and page 9, line 15 to page 10, line 2) as applied to claims 1-4 and 9-13 above, and further in view of **BES Optics Inc.** ("Schott Optical Filters", pp. 1-4).

Alberici, Pasternak and Applicants' admitted prior art are as applied above and incorporated herein.

The process of Alberici differs from the instant invention because Alberici does not disclose the following:

- a. Wherein said sharp cut-off filter is one of a WG220, a WG280, a WG295, a WG305, and a WG320 filter, as recited in claim 14.
- b. Wherein said sharp cut-off filter has a thickness in the range from about 0.5 mm to about 10 mm, as recited in claim 15.

BES Optics teaches that WG280, WG295, WG305, and WG320 filters are colorless ultraviolet filters (page 1). Schott WG filter glasses are colorless ultraviolet filters that absorb the UV below certain selective wavelengths while transmitting the longer ones. Some of the uses are applications that include analytical instruments and illumination equipment (page 2). WG 280 is a long pass filter having a thickness of 2 mm (pages 3-4).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the sharp cut-off filter described by Pasternak and Applicants' admitted prior art with wherein said sharp cut-off filter is one of a WG220, a WG280, a WG295, a WG305, and a WG320 filter; and wherein said sharp cut-off filter has a thickness in the range from about 0.5 mm to about 10 mm because Schott WG filters are colorless ultraviolet filters that would have absorbed the UV below certain selective wavelengths while transmitting the longer ones as taught by BES Optics

(pages 1-4).

The selection of old parts to operate in new environments in order to achieve the same results was held to have been obvious. *In re Ross* 105 USPQ 237. And the substitution of known equivalent structures was held to have been obvious. *In re Ruff* 118 USPQ 343 (CCPA 1958).

IV. Claims **17 and 19** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alberici et al.** (US Patent No. 5,076,813) in combination with **Pasternak et al.** (US Patent No. 5,326,440), **Applicants' admitted prior art** (specification, page 9, line 15 to page 10, line 2) and **JP 60-228424 ('424)**.

Alberici, Pasternak, Applicants' admitted prior art and JP '424 are as applied for reasons discussed above and incorporated herein.

The process of Alberici differs from the instant invention because Alberici does not disclose the following:

a. Wherein the norbornadiene is a purified norbornadiene, as recited in claim 17.

Applicants admit that the transformation may be carried out by direct ultraviolet radiation of purified or unpurified norbornadiene utilizing mercury arc lamps page 2, lines 12-18).

It would have been obvious to one having ordinary skill in the art at the time the invention was made to have modified the norbornadiene described by Alberici with

wherein the norbornadiene is a purified norbornadiene because a purified norbornadiene would have been a functionally equivalent starting material in the photochemical transformation of norbornadiene to quadricyclane as taught by Applicants' admitted prior art (page 2, lines 12-18).

V. Claims **20-22** are rejected under 35 U.S.C. 103(a) as being unpatentable over **Alberici et al.** (US Patent No. 5,076,813) in combination with **Pasternak et al.** (US Patent No. 5,326,440), **Applicants' admitted prior art** (specification, page 9, line 15 to page 10, line 2) and **JP 60-228424** ('424) as applied to claims 17 and 19 above, and further in view of **BES Optics Inc.** ("Schott Optical Filters", pp. 1-4).

Alberici, Pasternak, Applicants' admitted prior art and JP '424 are as applied above and incorporated herein.

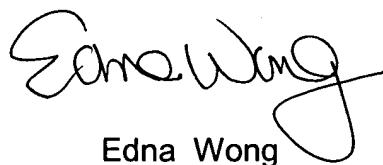
BES Optics is as applied for reasons discussed above and incorporated herein.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Edna Wong whose telephone number is (571) 272-1349. The examiner can normally be reached on Mon-Fri 7:30 am to 4:00 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Nam Nguyen can be reached on (571) 272-1342. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the

Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.



Edna Wong
Primary Examiner
Art Unit 1753

EW
December 19, 2006